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**Complete second order linear differential equations**  
**in Hilbert space and hydrodinamical applications**

There were investigated Cauchy problem for linear complete second order differential operator equations in Hilbert space  $\mathcal{H}$

$$\frac{d^2u}{dt^2} + (F + iK) \frac{du}{dt} + Bu = f(t), \quad u(0) = u^0, \quad u'(0) = u^1,$$

where  $F$ ,  $K$  and  $B$  are self-adjoint operator coefficients acting in  $\mathcal{H}$ . Theorem on strong solvability is proved, applications to the famous S. Krein problem on small movements of a viscous fluid in an open vessel and to other problems are studied.

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